

REMARKS

The applicant appreciates the examiner's thorough examination of the subject application and requests reexamination and reconsideration of the subject application in view of the preceding amendments and the following remarks.

Concerning items 3-4 of the subject action, the examiner rejects claim 1, 2, 5-9, 12-14, 21, 22, 25-29, and 32-36 under 35 USC §102(e) based on the teachings of Shoykhet (U.S. Patent No.: 6,129,477).

The applicant has cancelled claims 1, 2, 5-9, 12-14, 21, 22, 25-29, and 32-36 and submits herewith new claim 82-87. The applicant claims (in new claim 82) a method of maintaining a desired level of sub-transient reactance in a superconducting machine comprising: (a) specifying a desired level of sub-transient reactance; (b) producing a stator assembly including at least one stator coil assembly having a first predefined length; (c) producing a rotor assembly configured to rotate within the stator assembly; and (d) positioning an asynchronous field filtering shield, having a second predefined length that is less than said first predefined length, between the stator assembly and the rotor assembly; (e) wherein one of the first and second predefined lengths is adjusted to achieve the desired level of sub-transient reactance.

Shoykhet does not disclose elements (a) or (e) of the applicant's claimed method. Accordingly, Shoykhet is not a proper basis for a 35 USC §102(e) rejection, as the reference does not disclose each and every element of the applicant's claimed invention. Therefore, the applicant respectfully asserts that claim 82 is patentable over the cited reference. Further, as independent claim 85 includes elements that directly correspond to elements (a) and (e) of claim 82, applicant further asserts that claim 85 is also patentable over the cited reference. Additionally, as claims 83, 84, 86, and 87 each directly depend upon an allowable base claim, applicant respectfully asserts that these claims are also allowable.

As disclosed in the specification of the subject patent application, the applicant discovered that the sub-transient reactance of a rotating machine can be varied and fine tuned by varying the differential length between the asynchronous field filtering shield and the length of the stator. *See applicant's specification, page 10, line 22 - page 11, line 12.* As claimed in new

independent claims 82 and 85, the desired level of sub-transient reactance is specified and the differential length is adjusted to achieve the desired level of sub-transient reactance. This can be accomplished by adjusting the shield length to produce the desired level of sub-transient reactance for a known stator coil length. Or, alternatively, the stator coil length may be adjusted to produce the desired level of sub-transient reactance for a known shield length.

Upon reviewing the Shoykhet reference, it becomes clear that Shoykhet does not concern the concept of adjusting sub-transient reactance. Specifically, Shoykhet discloses a rotating machine in which the rotor and shield combination is substantially shorter than the stator assembly due to the use of a pair of torque tubes located on each axial end of the rotor assembly. *See Shoykhet, Fig. 4, items 74, 76.* The structure of these torque tubes is the subject matter claimed in the independent claims of Shoykhet. Due to the size and positioning of these torque tubes, their use resulted in a rotating machine in which the stator assembly is substantially longer than the rotor / shield combination.

However, Shoykhet failed to realize that the differential length between these two structures can be exploited to adjust the sub-transient reactance of the rotating machine. Accordingly, Shoykhet did not disclose “a method of maintaining a desired level of sub-transient reactance in a superconducting machine” including, among other things, “specifying a desired level of sub-transient reactance” ... “wherein one of the first and second predefined lengths is adjusted to achieve the desired level of sub-transient reactance”.

As Shoykhet did not realize that sub-transient reactance can be adjusted by varying the differential length between the asynchronous field filtering shield and the length of the stator assembly, it is improper to rely on Shoykhet to disclose a method of achieving what they never realized.

Concerning items 5-7 of the subject action, the examiner rejects claims 3, 4, 23, 24, 37, 38 under 35 USC §103(a) based on the combination of the teachings of Shoykhet and Hooper et al (U.S. Patent No.: 4,914,328). Applicant has cancelled claims 3, 4, 23, 24, 37, 38 and submits herewith new claims 82-87. As discussed above, Shoykhet fails to disclose, alone or in combination with the teachings of Hooper, “a method of maintaining a desired level of sub-transient reactance in a superconducting machine”, as claimed by the applicant.. Accordingly,

Applicant : Swarn S. Kalsi et al.
Serial No. : 09/905,611
Filed : July 13, 2001
Page : 6

Attorney's Docket No.: 05770-158001 / AMSC-544

applicant respectfully asserts that new claims 82-87 are patentable over the cited combination of references.

Concerning item 8 of the subject action, the examiner rejects claims 10, 11, 30, and 31 under 35 USC §103(a) based on the combination of the teachings of Shoykhet and Herd et al (U.S. Patent No.: 5,774,032). Applicant has cancelled claims 10, 11, 30, and 31 and submits herewith new claims 82-87. As discussed above, Shoykhet fails to disclose, alone or in combination with the teachings of Herd, "a method of maintaining a desired level of sub-transient reactance in a superconducting machine", as claimed by the applicant. Accordingly, applicant respectfully asserts that new claims 82-87 are patentable over the cited combination of references.

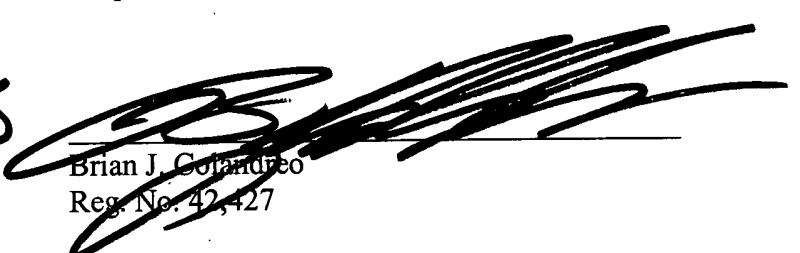
Attached is a marked-up version of the changes being made by the current amendment.

Applicant asks that all claims be allowed. Enclosed is a \$110 check for the Petition for Extension of Time fee. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date:

March 26, 2003


Brian J. Colandrea
Reg. No. 42,427

Fish & Richardson P.C.
225 Franklin Street
Boston, Massachusetts 02110-2804
Telephone: (617) 542-5070
Facsimile: (617) 542-8906

Version with markings to show changes made

In the claims:

Claims 1-14, and 21-38 has been cancelled.

Claims 82-87 have been added as follows:

82. A method of maintaining a desired level of sub-transient reactance in a superconducting machine comprising:

specifying a desired level of sub-transient reactance;

producing a stator assembly including at least one stator coil assembly having a first predefined length;

producing a rotor assembly configured to rotate within the stator assembly; and positioning an asynchronous field filtering shield, having a second predefined length that is less than said first predefined length, between the stator assembly and the rotor assembly;

wherein one of the first and second predefined lengths is adjusted to achieve the desired level of sub-transient reactance.

83. The method of claim 82 further comprising rigidly affixing the asynchronous field filtering shield to the rotor assembly.

84. The method of claim 82 wherein the at least one stator coil assembly includes a center section and a pair end-turn sections positioned at distal ends of the center section, and positioning an asynchronous field filtering shield includes:

positioning the asynchronous field filtering shield between the center section of the at least one stator coil assembly and the rotor assembly; and extending the end-turn sections of the at least one stator coil assembly beyond the asynchronous field filtering shield.

85. A method of maintaining a desired level of sub-transient reactance comprising:
specifying a desired level of sub-transient reactance;
producing a stator assembly including at least one stator coil assembly having a
first predefined length and including a center section and a pair end-turn sections
positioned at distal ends of the center section;
producing a rotor assembly configured to rotate within the stator assembly;
positioning an asynchronous field filtering shield, having a second predefined
length which is less than said first predefined length, between the stator assembly and the
rotor assembly; and
flaring the end-turn sections of the at least one stator coil assembly radially away
from the asynchronous field filtering shield, thus creating an expanded gap between the
end-turn sections and the asynchronous field filtering shield;
wherein one of the first and second predefined lengths is adjusted to achieve the
desired level of sub-transient reactance.

86. The method of claim 85 further comprising rigidly affixing the asynchronous field
filtering shield to the rotor assembly.

87. The method of claim 85 further comprising positioning a flux return path
circumferentially about the outer surface of the end turn sections of the at least one stator coil
assembly.

In the abstract:

[A superconducting rotating machine includes a stator assembly. This stator assembly includes at least one stator coil assembly having a first predefined length. A rotor assembly is configured to rotate within this stator assembly and is spaced from the stator assembly by a gap. The rotor assembly includes at least one superconducting rotor winding assembly that, in operation, generates a magnetic flux linking the stator assembly. The rotor assembly includes an

asynchronous field filtering shield having a second predefined length that is less than the first predefined length. This shield is positioned between the stator assembly and the rotor assembly.]

A method of maintaining a desired level of sub-transient reactance in a superconducting machine includes specifying a desired level of sub-transient reactance. A stator assembly is produced that includes at least one stator coil assembly having a first predefined length. A rotor assembly is produced that is configured to rotate within the stator assembly. An asynchronous field filtering shield, having a second predefined length that is less than said first predefined length, is positioned between the stator assembly and the rotor assembly. The desired level of sub-transient reactance is achieved by adjusting either the first predefined length or the second predefined length.